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The Erosion of US Nuclear Deterrence Credibility in the 21st Century

by

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Biography

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Introduction

“The US maintains nuclear weapons to ‘deter, dissuade, and defeat’ a range of immediate and potential conventional, nuclear, chemical, and biological weapons threats.”¹ No other weapon matches its physical and psychological power. While their emphasis in the US national security strategy has diminished since the end of the Cold War, nuclear weapons continue to serve as the ultimate deterrent.

Looking forward, shifts in the strategic landscape are calling into question the value of nuclear weapons. Technology continues to advance exponentially, multiplying the number of threats and creating new domains such as cyberspace. When combined with political and social changes driven by globalization, the international relations system has become more complex by shifting the power balance between states; empowering small groups and individuals; and giving rise to new conceptions of conflict such as hybrid warfare. This increased complexity is challenging the credibility of the US nuclear arsenal and making deterrence more complicated. These developments raise an important question: Is the credibility of the US nuclear stockpile waning given these changes in the international system? To answer this question, this paper begins by providing a primer of traditional deterrence. Next, it traces how the shifting nature of the international system complicates nuclear-based deterrence across the spectrum of conflict. Given these shifts, the paper concludes by assessing the credibility of the US nuclear stockpile from a policy perspective and makes recommendations to resurrect its credibility. To understand the impact that the shifts in the international system has had on nuclear deterrence, one must first understand the basic principles of the strategy that comprise deterrence.

A Deterrence Primer

What is Deterrence? Emanuel Adler defines deterrent strategy as “a coercive logic aimed at dissuading the use of violence.”² Deterrence is a subset of **coercion**—an attempt to convince an adversary to change its behavior by manipulating the anticipated costs and benefits of an action.³ **Deterrence** is “the prevention from action by fear of the consequences.”⁴ It is a “state of mind brought about by the existence of a credible threat of unacceptable counteraction.”⁵ The other subset of coercion is **compellence**, and differs from deterrence in “that the punishment be administered *until* the other acts, rather than *if* he acts.”⁶

Deterrence is achieved through scalable levels of credible action beginning with **dissuasion**—the most passive component of deterrence.⁷ Dissuasion does not “incorporate the threat of violence or punitive action” and may take the form of influencing adversaries through “public opinion, public diplomacy, or propaganda.”⁸ The next level of deterrence with respect to increasing levels of force is **denial**, which seeks to deny the adversary its objective largely through defensive measures.⁹ Examples include policing, screening, intelligence gathering, and watch lists.¹⁰ Denial, therefore, deters by decreasing the probability of success of an adversary. Deterrence by **threat** is the highest form of deterrent force and relies on the overt use of a specific capability.¹¹ If the adversary perceives its action as being more costly than beneficial, then deterrence will succeed.

Key Assumptions. Deterrence theory is based on several key assumptions. It assumes that actors are rational; have common knowledge of the rules and social logic of the game; exchange and understand information (communication); accurately assess the risks, costs, and gains of strategic games; can control their emotions; and hold normative assumptions about the appropriateness and proportionality of military actions.¹² It is important to note that rationality is

not synonymous with reasonableness. One may consider religious extremists as irrational in that they employ suicide bombers; however, from a leadership perspective, their goals remain political in nature and are driven by calculations about gains and losses in influence.¹³ Hence, while their actions are rational in *their* cultural context, they may be viewed differently by Western standards. Additionally, actors and governments can employ other methods of decision making not tied to rationality such as those examined by Graham Allison's study of the Cuban Missile Crisis.¹⁴ In these cases, if a decision maker's process is flawed and rationality is in doubt—perhaps by bad information, bureaucracy, or internal politics, deterrence theory fails.¹⁵

Deterrent Strategy Design. With these assumptions in mind, the design of a deterrent strategy begins by understanding the *values* of one's adversary. During the Cold War, a culture of nuclear deterrence, supported by common knowledge, built stability into the relationship between the US and USSR.¹⁶ Looking forward, gaining an understanding of potential adversaries remains important. As the Congressional Commission on America's Strategic Posture noted, "essential to the future effective functioning of deterrence is that we gain insights into the strategic thinking of the nations being deterred, so that we can understand their motivations and how to communicate effectively with them in crisis."¹⁷

Once an adversary's value system is understood, the deterrent strategy itself rests on three legs: *capability, credibility and signaling*.¹⁸ The first element, capability, is the most basic element in the functioning of deterrence.¹⁹ To be deterred, adversaries must understand the capabilities of the deterrer, and those capabilities must be sufficiently visible and impressive.²⁰ This can be performed in a variety of ways including military parades, exercises or deployments.

Next, the credibility of the threat must be established. *Credibility* is the product of will and capability (Credibility = [will] x [capability]).²¹ If the will or capability of the deterrer is

zero, then the credibility of the deterrent is zero. If they are both strong, then the deterrent has the ability to succeed. This success, however, is still dependent on the deterree's value system and the rationality of the cost versus benefit determination. Simply possessing a military capability, therefore, does not assure its deterrent value unless there is a fear it will be used.²²

To generate this fear, a nation must signal its willingness to use the capability and actively shape perceptions through policies, statements and actions.²³ Therefore, communicating the will and its ability to carry out an intended action is the most important foundation to a nation's policies and actions.²⁴

The Role of Perception in Deterrent Strategy. Since deterrence involves two or more players, a deterree's perception of a deterrer's capability, credibility and signaling is critical. There are two important ideas that affect perception and each tends to be at odds with one another. They include the concepts of self-deterrence and the role of ambiguity in deterrent strategy.

Self-deterrence occurs when a deterrer has difficulty mounting and executing a credible threat of retaliation if the adversary crosses an imaginary threshold.²⁵ It is likely to affect countries who traditionally adhere to the Just War doctrine of proportionality or Western nations whose "casualty-sensitive and reputation-conscious militaries" are perceived to be reluctant to use force.²⁶ The lack of credibility, therefore, is rooted in the perception of a lack of will. This may arise when a nuclear state attempts to deter asymmetric attacks by a nonnuclear challenger or when threats of nuclear force seem disproportionate.²⁷

Another factor shaping perception in deterrent strategy is the role of ambiguity. Ambiguity is designed to raise the danger-level in a deterrent strategy precisely because the threat is not clearly communicated. For example, calculated ambiguity has been a longstanding

element of US nuclear declaratory policy, and includes the threat of using nuclear weapons in a first-strike. This forces potential adversaries to consider the possibility of the US responding by overwhelming means at a time and manner of its choosing.²⁸ However, calculated ambiguity—when combined with a perception of self-deterrence—may fail in a crisis when explicit communications may be more effective.²⁹

During the Cold war, application of these principles of deterrence gave rise to several nuclear-based deterrent strategies. The most significant was the idea of extended deterrence, which expanded the US nuclear umbrella to its allies. This strategy not only helped size US nuclear forces, it cemented bi-lateral security agreements with key US partners.³⁰ Therefore, like the advent of extended deterrence, innovations in nuclear-based deterrence strategy will become increasingly more important as the international system becomes more complicated.

Nuclear Deterrence In A Shifting International System

During the Cold War, the principle challenge was to ensure that deterrence functioned effectively.³¹ This was achieved through efforts designed to maintain strategic stability and prevent the Cold War from going hot.³² In order to maintain the US nuclear deterrent, a “technically ambitious” national program led to a US arsenal of 32,000 nuclear warheads for “strategic missiles, tactical air-dropped bombs, nuclear artillery shells, nuclear land mines, nuclear torpedoes, and nuclear anti-ballistic missile warheads.”³³

The nuclear force designed by the US during the Cold War was built as a credible deterrent to an attack by the USSR on US nuclear forces and its allies.³⁴ The accompanying extended deterrence strategy made US allies feel more secure and disincentivized these nations from acquiring their own nuclear weapons.³⁵ Accordingly, the opportunity to construct a nonproliferation regime arose and gave birth to the International Atomic Energy Agency and

nuclear Non-Proliferation Treaty.³⁶ In sum, the “US nuclear strategy has been guided by two key imperatives. The first is to reduce nuclear dangers with a deterrent that is strong and effective. The second is to utilize arms control and nonproliferation to further reduce those dangers.”³⁷

Although the threat of a nuclear Armageddon has declined over the past two decades, new threats have taken shape and the overall environment has “grown more complex and in some ways more precarious.”³⁸ Presently, three significant challenges have emerged that will force shifts in US nuclear deterrent strategy: an increase in nuclear proliferation, an unpredictable strategic environment, and an increasing risk of nuclear terrorism.³⁹

Nuclear proliferation

During the Cold War, extended deterrence and the creation of the nonproliferation regime kept proliferation in check.⁴⁰ Although 189 of 193 states have signed the nuclear Non-Proliferation Treaty, it has not stopped countries such as India, Pakistan, North Korea, and Iran from going nuclear.⁴¹

Proliferation concerns the US for a number of reasons. First, it could bring about more proliferation as neighbors of new nuclear nations seek their own capability. This would risk creating destabilizing regional arms races while increasing the chance of an outright nuclear exchange.⁴² For instance, if Iran produces a nuclear weapon, what would Egypt, Saudi Arabia, Turkey, and other Middle Eastern states do? As evidence of this risk, some forty nations allegedly have the technology and made “early moves in the nuclear arena” to hedge against the combination of the loss of extended deterrence and proliferation.⁴³ These nations, should they acquire nuclear weapons, will complicate future deterrent strategies by having to deal with multiple actors on what used to be a two-party stage.⁴⁴

Second, many of the nations flirting with developing nuclear capabilities are belligerent toward the US.⁴⁵ These states will attempt to acquire nuclear weapons in hopes of deterring the US from intervening in a regional conflict.⁴⁶ Although the US would dominate a potential nuclear exchange versus a rising nuclear power, the adversary may still be able to deter the US by asymmetric employment on the homeland or covert employment by a terrorist organization.⁴⁷ While proliferation alone is worrisome for US policy planners, the emerging unpredictable strategic environment is adding to the difficulty.

An Unpredictable Strategic Environment

The combination of globalization and the exponential increase of technological advances promise to make the international relations system more complex and unpredictable. It will likely include more nations with ballistic missile and weapons of mass destruction capabilities, led by senior leaders less engaged and familiar with their nuclear programs, and who are more apt to use them as a weapon rather than as a deterrent when compared to their leadership counterparts of the Cold War era.⁴⁸

As more nations obtain these capabilities, the increased dynamics of the geopolitical environment from globalization's interconnectedness and the time compression that comes with it, will likely narrow the gap between deliberate and crisis planning, significantly increasing the likelihood of miscommunication and deterrence failure. Israel and Iran may provide one example of this trend. It is probably impossible to develop an effective and sustainable deterrent if Iran were to obtain a nuclear weapon because of the intertwining of relationships between actors such as Israel, Iran, Syria, Hezbollah, Lebanon, Russia, China, Saudi Arabia, and the US.⁴⁹

Furthermore, with the evolution of more nuclear players, the rules of nuclear deterrence and its norms are more likely to be less agreed upon and hence less stable for the international community. It is also likely that future rogue leaders with little respect for humanity will rise to power and eventually use the weapon. As President Obama stated during his Nobel Peace Prize acceptance speech, “Make no mistake: evil does exist in the world. A non-violent movement could not have halted Hitler’s armies. Negotiations cannot convince Al Qaeda’s leaders to lay down their arms. To say that force is sometimes necessary is not a call to cynicism – it is a recognition of history; the imperfections of man and the limits of reason.”⁵⁰

Finally, future asymmetric or cross-domain threats promise to complicate the future geopolitical structure. As Colonel Dawkins wrote in a 2009 paper, a “flattening world and rapid technological change...mean both nation states” and “individuals will have access to technologies that the world has not even seen yet—technologies that can and will likely be used to threaten other nations states and individuals.”⁵¹ This rapid change in technology, economic interdependence, increased interconnectedness, and additions to the numbers of warfighting domains will complicate future deterrence strategies.⁵² Future “strategists will have to develop conventional, nuclear, space, cyber, and perhaps even biowarfare and nanowarfare deterrent strategies...however, it will not be as simple as stating that if country X attacks the US with a massive cyber, bio, space, or nano attack that we will respond with nuclear weapons.”⁵³ Overlapping deterrent strategies with enough credibility to thwart all actors must be developed actor by actor, domain by domain, and still vary base on the circumstances of each situation in order to put stability into the future strategic environment.

Nuclear Terrorism

On top of proliferation and an unstable strategic environment is a mix of violent non-state actors involving themselves in nuclear terrorism. These may be groups or individuals acting on their own or on behalf of a state (e.g. Hezbollah for Iran or Syria). As President George W. Bush declared, “The gravest danger to freedom lies at the crossroads of radicalism and technology. When the spread of chemical and biological and nuclear weapons, along with ballistic missile technology...occurs, even weak states and small groups could attain catastrophic power to strike great nations.”⁵⁴

The challenges presented by non-state actors are that they operate outside the “normal boundaries and rule sets that govern states” and “states cannot win in this competition against non-state actors using the current rule sets.”⁵⁵ As Moisés Naim argues, “states must develop new tools and approaches with which to compete effectively against this new kind of adversary. These tools include developing new notions of sovereignty, strengthening existing multilateral institutions, [and] developing new mechanisms that recast outdated concepts of warfronts defined by geography and combatants according to the Geneva Convention....”⁵⁶

In order to succeed versus non-state actors, “a multi-layered approach to deterrence offers the greatest chance for success.”⁵⁷ This will require strategists “...to design a set of policies that effectively apply dissuasion, denial, and threat at each of the three levels of analysis (individual, domestic, and international).”⁵⁸ Furthermore, in order for the “...deterrence strategy to work, specific policies must be developed that target the individual group member, the nation and society giving rise to a group, and the international system in which non-state actors operate.”⁵⁹ This will require a tremendous amount of cooperation within the international community and

across cultures that may not be achievable. This promises to make the orchestration of an effective nuclear deterrent strategy very complex and difficult.

Assessing the Credibility of the US Nuclear Deterrent

While proliferation, a changing strategic environment, and the growing risk of nuclear terrorism make traditional nuclear strategies less relevant, a more important issue lies in the credibility of the nuclear deterrent itself. As stated previously, credibility is the product of capability and will. Deterrence is therefore a bluff, if not backed up by both. However, the *perception* of capability and will from the viewpoint of the group being deterred is just as important and may be misperceived due to cultural biases between the deterrer and the deteree. For example, some cultures may not believe others have a capability unless they see an actual test of the weapon, while others may only need to see a budget expense, hear a policy speech, or see the delivery system in a parade. This is what makes deterrence and assessments of credibility so difficult and particular to the individual circumstances and actors. The paper will now examine areas seen as weakening US nuclear deterrence credibility and offer recommendations, while keeping in mind that credibility is in the eye of the deteree, and is invariably difficult to capture.

Lack of nuclear stockpile modernization undercuts credibility?

The US is not modernizing its nuclear weapons and has shut down many production facilities—inhibiting advances in capability, safety, security, reliability, and adaptability. Additionally, US nuclear weapons were not designed for an indefinite stockpile life, and the impacts of aging on the weapons are uncertain.⁶⁰ Thus, the lack of modernization will decrease the size of the stockpile over time, hence decreasing US capability. By allowing its nuclear

capability to diminish over time, the US may give potential adversaries the perception that it lacks the capability or even the will to use nuclear weapons.

Furthermore, the lack of modernization eliminates options to adopt the stockpile to new threats and the new strategic landscape, which may signal a lack of US will to adversaries and allies. As General Chilton argues, “we need weapons that are designed for and support the needs of the warfighter in the 21st Century.”⁶¹ For example, increases in accuracy and smaller yield weapons with minimal nuclear fallout would decrease collateral damage. In addition, it would create opportunities to target the leadership of adversarial actors more discretely, while simultaneously reducing the impact to population centers and industry. Modernized in these ways, US nuclear weapons would trade destructiveness for effectiveness, and could be perceived as increasing national will and capability, and consequently increase US credibility.⁶²

The existing stockpile may also reduce deterrent credibility in cross-domain scenarios. For example, if US on-orbit space assets were attacked or US troops stationed overseas were attacked from any domain (nuclear, bio, cyber, space/directed energy), would the President consider responding with a large yield nuclear weapon if that’s all he had? As Leiber and Press argue, “A credible deterrent must give US leaders acceptable options...an arsenal that can only destroy cities fails that test.”⁶³

Opponents of modernization argue that moves to modernize would increase the likelihood of their use. However, this argument is a non sequitur in a strategic sense. By increasing the odds of US use, modernization increases deterrent value and reduces the chance of deterrence failure precisely because it may bring the nuclear option back on the table across a broader set of scenarios that is inherent in today.

Lack of Testing undercuts credibility?

In 1998, India conducted five nuclear weapon “tests” over a period of a few weeks.⁶⁴ Pakistan responded by “testing” six weapons in two days.⁶⁵ Thomas Schilling stated these were not tests, they were demonstrations signaling one another their respective nuclear readiness.⁶⁶

Although the US is not a signatory to the Comprehensive Test Ban Treaty, it declared a unilateral halt to nuclear testing in 1992. While modeling and simulation may be able to replace the need for many tests done in the past, basic science courses emphasize all models are false—some are just more useful than others.⁶⁷ The combination of an aging nuclear arsenal and the complexity of nuclear weapons and their subsystems will make it difficult to certify them until infinity. This adversely affects the knowledge of weapons reliability and denies a sensible and reliable means to test new nuclear weapons capabilities—all eroding credibility.

Lack of investment in delivery capability undercuts credibility?

In addition to an aging stockpile and ban on testing, the US has significantly reduced its investment in delivery platforms. Examples include a lack of investment in sea and land-based missile infrastructure, dual-capable aircraft replacements or nuclear-capable cruise missile systems.⁶⁸ Taken together, these examples may signal a lack of commitment or will to allies and adversaries, resulting in declining credibility.

Lack of human capital undercuts credibility?

High-level emphasis on nuclear policy, planning, and programming has decreased and will continue to negatively affect the intellectual capital needed to design nuclear strategy. For instance, as General Chilton identified during preparation for the Nuclear Posture Review and support to START Follow-On negotiations in 2009, the pool of experts in the US nuclear

deterrence arena has decreased substantially over the past two decades. He acknowledged the US “skipped a generation” in developing scholars and leaders with an understanding of deterrence.⁶⁹ A former director of the Defense Nuclear Agency also supports this view by arguing, “although it represents the strongest element of US foreign policy and national security strategy, we’ve dropped it [deterrence] from our tool kit. Our strategists, diplomats, and military don’t understand it, and we’ve taken none of the necessary preparatory actions to make it credible.”⁷⁰

Political disinterest undercuts credibility?

During the Cold War, the executive and legislative branches worked aggressively with one another on the development of a strong and cohesive nuclear policy effectively enhancing credibility. Today, “the differences have blocked progress in moving to a nuclear posture and infrastructure for the contemporary environment.”⁷¹ There is currently no real dialogue or accepted methodologies for reaching a decision on how many weapons are needed.⁷² This has given rise to comments by allies that the credibility of US extended deterrence could be called into question if its capabilities to hold a wide variety of targets at risk are lessened by continued arsenal reductions.⁷³

Today’s generation of elected officials in Congress have little understanding of the use for nuclear weapons and their purpose as a deterrent, vice as a weapon. For example, both President Clinton and Bush pursued the Robust Nuclear Earth Penetrator, but were foiled by opposition who claimed there was “no military requirement.”⁷⁴ Additionally, there appears to be a lack of understanding for the need of the Reliable Replacement Warhead as it has become mired in debates of testing, nuclear weapons elimination, or perceptions of it being an entirely

new weapon. Finally, the US has failed to implement many of the recommendations from the 2001 Nuclear Posture Review or successfully linked capability with policy.⁷⁵

Policy mis-steps undercut credibility?

Several policy statements and policies have contributed to the decrease in credibility. For instance, former Japanese Prime Minister Yasuhiro Nakasone noted that “Japanese security is dependent on US nuclear weapons, but that the future of the US extended deterrent is unclear.”⁷⁶ Similarly, since North Korea conducted its nuclear test in 2006, South Korean defense ministers have asked the US to return the nuclear weapons once stored in their country while other government officials have asked for repeated public declarations reaffirming US extended deterrence of South Korea.⁷⁷ While, comments like these from non-nuclear states having the technology base to begin nuclear programs are becoming more abundant, it demonstrates a potential lack of will or a coordinated and stagnated policy agenda, harming the credibility of the US nuclear deterrent and possibly leading to proliferation.

A stagnant policy may have exacerbated the mixing of the non-proliferation and elimination of nuclear weapons debates. This confusion originated after the Cold War when “groups of states, activists, and antinuclear organizations, and so on, have piggybacked their objective—nuclear disarmament—onto ‘non proliferation,’ effectively hijacking the term” and claiming that the nuclear Non-proliferation Treaty “requires nuclear disarmament, which it does not.”⁷⁸ While “going to zero” is a noble idea, the argument “relies largely on moral objections to the existence of nuclear weapons, rather than on identified national security issues.”⁷⁹ Similarly, the entire bi-partisan Congressional Commission on the Strategic Posture of the US found that “reaching the ultimate goal of global nuclear elimination would require a fundamental change in geopolitics.”⁸⁰ So what then is an adversary to perceive as US policy intent? A benevolent,

unilateral attempt to reduce the risk of nuclear war? Or the uncertainty of its will to use them? While the former is unlikely, actors for which US nuclear deterrence credibility is aimed can misconstrue the latter.

Failing to keep pace with technological and geopolitical developments undercuts credibility?

The impacts of globalization are accelerating rapidly. The proliferation of technological advances is increasing the number of actors capable of using weapons of mass effect across a spectrum of domains. This has increased the complexity of responding to future threats and hence the difficulty in creating a nuclear deterrent strategy that is credible for several reasons.

First, the technology of attributing attacks in domains such as biological, cyber and space are limited and pose an uncertain future. For instance, anomalies on spacecraft can be difficult to discern—the inability to distinguish between effects caused by software glitch, solar event, hardware failure, or a nefarious directed-energy attack will make any deterrent strategy ineffective. Further complicating attributability is the increased accessibility of technology by non-state actors and individuals. For example, the US anthrax attacks in 2001 were difficult to attribute, and likely conducted by a lone individual. In addition, technological proliferation has contributed to an easier means of delivery for most weapons. For instance, cyber attacks can originate from a far away computer terminal, further complicating the ability to attribute attacks.

Even if attacks can be attributed, cross-domain attacks promise to increase the complexity of US response options and are limited by the capability of existing US nuclear weapons. For example, if the US were to be attacked by an actor using the cyber domain to take down part of its electrical grid while opening up its dams—causing tens of thousands of deaths through second and third order effects and causing trillions of dollars in damage—how would the

US respond? Would that event drive the US to commit to the use of large nuclear weapons against foreign cities or even fielded force? The answer is unclear.

Conclusion and Recommendations

The credibility of the US nuclear weapons arsenal is eroding and its deterrent value is decreasing. US nuclear deterrence must be re-evaluated as globalization and the exponential increase of technology make the geopolitical climate more dynamic. Policy decisions over the past two decades influencing nuclear posture have further affected the credibility of the US nuclear weapons stockpile.

While the source of the primary threat from the Cold War period has changed, the need for a deterrent to conventional and WMD threats in the future will still be necessary. The choices made today will impact the security of the US and its allies for generations. Therefore, the US must pursue the following actions to reverse the negative trend of its declining nuclear deterrence credibility to ensure its nuclear deterrent is deemed credible by the widest variety of actors and allies in the future.

Develop a Comprehensive Strategy

First, the US must develop a comprehensive deterrent strategy.⁸¹ It should be based on national objectives, available resources, and include the existence of all current warfighting domains and the potential for future ones. This will enable the US to balance resources and effectively deter threats from multiple domains efficiently while including denial and dissuasive strategies. Furthermore, it must effectively weave arms control and nonproliferation plans into the strategy. Finally, the US should also direct long-range plans to shape the perceptions it desires in order for deterrence to succeed by developing new capabilities, while sizing and

sustaining the nuclear infrastructure appropriately and avoiding the creation of a hollow nuclear force with diminutive and decreasing credibility.

Recapitalize Nuclear Infrastructure

Once developed, the strategy will provide a roadmap to develop a long-term plan to recapitalize and sustain the US nuclear infrastructure.⁸² This includes human capital (designers, scientists, engineers, operators, and maintainers); design, test, and production facilities; and maintenance and operational forces. This top-level strategic plan needs to be capable of adapting and sustaining the needs of a nuclear stockpile in a shifting geopolitical environment to assure adversaries and allies that the US nuclear deterrence is able and willing.

Modernize the Nuclear Arsenal

Next, the US will need to modernize its nuclear arsenal.⁸³ Upgrades should focus on the improvement of safety, security, and reliability of the weapons. Bolstering these aspects will maintain or improve the capability of the stockpile while reasserting the will of the US to use them, thereby enhancing deterrence. Furthermore, the US should pursue advances in nuclear weapons capability to include warheads and delivery systems.⁸⁴ This would give the US President a diversity of options to match the deterrent needs of the future—including cross-domain deterrence needs that cannot be met by other means while hedging against the evolution of future threats from technologies and domains not yet envisioned.

Resume Nuclear Testing

In addition, the US should cease its prohibition on nuclear testing.⁸⁵ This will eliminate the questioning of US nuclear capability as the stockpile ages and steadily erodes its credibility. Furthermore, it will facilitate modernization of the weapons required to maintain credibility in

the future. Lastly, it will demonstrate via non-scientific and modeling means to its allies and potential adversaries, that the US has the capability and thus a credible nuclear deterrent.

Bolster Capabilities That Support Cross-Domain Attribution

Next, the US needs to emphasize and resource intelligence and the science of attribution.⁸⁶ Understanding the multitude of new actors and potential threats in the 21st century geopolitical landscape to the same extent as that of the Soviet Union during the Cold War is critical to developing a comprehensive deterrent strategy and modernization plan. The challenge has exponentially increased but it must include an effective analysis of the capabilities, relationships, and values of nations, groups, and individuals threatening the US in order for policy makers to develop effective plans. Of particular importance to policy makers and the development of a credible nuclear deterrent strategy is the ability to identify the origin and the nations and societies supporting WMD attacks. An inability to do so will certainly make any deterrent, nuclear or not, incredible.

Expand Investment in Nuclear Human Capital

Improving the education and dialogue of the nuclear deterrence debate will reverse the erosion of US nuclear credibility.⁸⁷ This includes fostering increased communication between the US executive and legislative branches; the government and the public; and between all nations—allies and adversaries alike. Without communication, nuclear deterrence is destined to fail. Cultural exchanges, both civilian and military, would improve education among participating nations and help spread lessons learned from the Cold War to players new to the deterrent stage. In addition, an emphasis on educating the public on the differences between the nuclear disarmament, non-proliferation, and nuclear deterrence debates would arguably move all three policies closer to their mutual goals of global security. Finally, the US policymakers

should provide a consistent deterrent message and repeat it often.⁸⁸ It should continue with the language of calculated ambiguity, the option for first-use, reaffirm extended deterrence to its allies, cover cross-domain deterrence, and emphatically declare that it will hold states intentionally or unintentionally proliferating technologies of mass effect accountable.

Redouble Counter Proliferation Efforts To Maintain A Stable Deterrence Regime

While not directly affected by nuclear proliferation, there is an unraveling circular relationship between proliferation and credibility spiraling out of control and challenging nuclear deterrence credibility. First, lacking credibility, nuclear weapons have little value preventing proliferation in situations where the capability or perceived will might thwart its increase. Second, as more actors acquire nuclear weapons, the requirements for maintaining credibility against a wider variety of actors increase. Thus, as the number of nuclear powers increases, the global security environment becomes more complex and unpredictable. The result would be a corresponding need for increased credibility to deal with the variety and number of nuclear players—each of whom would have their separate perceptions of US capabilities and its will, further complicating the strategic environment. In addition, as the numbers of players increases, the likelihood of a non-rational actor emerging increases. Once that occurs, credibility means little and deterrence will fail!

These recommendations should eliminate the erosion of US nuclear deterrence credibility over the past two decades and provide the foundation for the future to overcome shifts in the strategic landscape. For without any changes, the erosion of US nuclear deterrence in an era of globalization, proliferation, and nuclear terrorism is almost certainly liable to result in the unthinkable—the use of a nuclear weapon being used for an evil purpose rather than as a tool for deterrence.

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